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RASHID, DAVID	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/520,879	Applicant(s) SHIMAMURA ET AL.	
	Examiner DAVID P. RASHID	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 8/29/2008.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-5 and 7-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 9-14,24-29 and 32 is/are allowed.

6)☒ Claim(s) 1-5,7,8,15-23,30 and 31 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

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Amendments

[1] This office action is responsive to Amendment and Response to Office Action and Request for Extension of Time received on August 29, 2008. Claims 1-5 and 7-32 remain pending.

Response to Arguments

[2] Remarks filed August 29, 2008 with respect to claims 1-6, 15-22, and 30 have been respectfully and fully considered, but not found persuasive.

Summary of Remarks

> In contrast, the "waveform information detection unit (21)" of Sone (US 4,771,268) does not teach the above-described features of the present invention at all, nor do any of the secondary references Johansen, Fouche or Koyama. In light of the foregoing, Applicant submits that the present invention would not have been obvious from Sone in combination with Johnson.

Applicant's Remarks at 7, August 29, 2008.

Examiner's Response

However, though *Sone et al.* discloses a waveform information detection unit which detects from said response signal at least one of the individual parameters as waveform information to output a detection signal representing the waveform information, said response signal so as to have a center potential substantially equal to that of a reference signal with said supply signal, which voltage level cyclically varies between a positive or negative supply voltage, *Sone et al.* does not disclose (i) wherein the supply signal generating unit generates an AC supply signal; and (ii) which voltage level of the response signal cyclically varies between a positive or negative supply voltage and a ground potential. *See* claim 1 rejection below.

Johansen et al. and *Knapp* teach elements such that it would have been obvious to one of ordinary skill in the art at the time the invention was made for the supply signal generating unit of *Sone et al.* to include elements (i) and (ii) above. *See* claim 1 rejection below.

Priority

[3] MPEP §201.13 II G states "An applicant may incorporate by reference the foreign priority application by including, in the U.S. application-as-filed, an explicit statement that such specifically enumerated foreign priority application or applications are "hereby incorporated by reference." The statement must appear in the specification. See 37 CFR 1.57(b) and MPEP §608.01(p)." – it is suggested to incorporate by reference the foreign priority application by including an explicit statement in the specification.

Claim Objections

[4] In response to Amendments to the Claims received on August 29, 2008, the previous claim objections are withdrawn.

Claim Rejections - 35 USC § 112

[5] The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Failure to Particularly Point Out and Distinctly Claim

Claims 1-5, 7-8, 15-23, and **30-31** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, l. 14 (emphasis added) cites "to have a center potential substantially equal to that of a reference signal", but it is unclear to what definite degree is considered "substantially equal". Claims 4-5, 7-8, 15-23, and 30-31 are rejected for failing to cure the deficiencies of their respective dependents.

Claim Rejections - 35 USC § 103

[6] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Sone et al. in view of Johansen et al. and Knapp

[7] **Claims 1-5, 15-22,** and **30** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,771,268 (issue Sep. 13, 1998; hereinafter "Sone et al.") in view of U.S. Patent No. 7,184,581 (filed Jun. 8, 2001; hereinafter "Johansen et al.") and U.S. Patent No. 5,325,442 (issued June 28, 1994, hereinafter "Knapp").

Regarding **claim 1**, while *Sone et al.* discloses a biometric recognition apparatus (fig. 1) characterized by comprising:

a detection element (fig. 1, item 3) which electrically contacts an object (finger in fig. 1);

a supply signal generating unit (fig. 1, items A, V_{SS},V_{DD}) which generates a supply signal (3:7-57; fig. 3, item A – “a high voltage level which is inputted to the inverter 8 in the state the touch electrode 3 is not contacted with the human body" at 3:47-51);

a response signal generating unit (fig. 1, item 8) which includes a resistive element (fig. 1, item 5) connected between said supply signal generating unit (fig. 1, items V_{SS},V_{DD}) and said detection element (fig. 1, item 3), applies the supply signal to said detection element through the resistive element, extracts, from one terminal of the resistive element, a response signal (fig. 3, items (c), (d)) containing not less than one individual parameter (e.g., fig. 3, items T1, T1+T2, T2) which changes depending on whether or not the object is a living body (items (c), (d) are different than (a) in fig. 3), and outputs the signal;

a waveform information detection unit (fig. 7; fig. 8, item 21) which detects from said response signal (fig. 3, items (c), (d)) at least one of the individual parameters (e.g., fig. 3, items T1, T1+T2, T2) as waveform information (e.g., item T1 is a waveform time-shift) to output a detection signal (the wave carrying time-shift T1 is a detection signal) representing the waveform information, said response signal (fig. 3, items (c), (d)) having a voltage level thereof shifted (the voltages of items (c), (d) are shifted by items T1, T1+T2, T2 respectively) so as to have a center potential (the voltages of items (c), (d) at fig. 3 have center potentials) substantially equal (the voltages of items (c), (d) at fig. 3 have center potentials are “substantially” equal to that of item (b), T0) to that of a reference signal (e.g., fig. 3, item (b), T0) which is synchronized (synchronized, and then “affected by the influence of the flowing capacity component Cx at this time. . .” at 3:53-55) with said supply signal (3:7-57; fig. 3, item (a)), which voltage level cyclically varies between a positive (the voltage level of items (c), (d) cyclically varies between a positive supply voltage as shown in fig. 3, item (a) being its underlying base voltage before being

either the flowing capacity component or physical touch is made) or negative supply voltage, *Sone et al.* does not teach (i) wherein the supply signal generating unit (fig. 1, items A, V_{SS}, V_{DD}) generates an AC supply signal; and (ii) which voltage level of the response signal cyclically varies between a positive or negative supply voltage and a ground potential.

Johansen et al. discloses a system for real time finger surface pattern measurements that teaches wherein a supply signal generating unit (fig. 3, item 34) generates an AC supply signal (3:60-64).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the supply signal generating unit of *Sone et al.* to include generating an AC supply signal as taught by *Johansen et al.* "to apply the measuring results…in such a way that the finger surface pattern can be determined more accurately." *Johansen et al.* at 2:3-6.

Knapp teaches a voltage level of a response signal (fig. 6 signals) cyclically varies between a positive or negative (the voltage supply is at least either negative or positive, if not both) supply voltage and a ground potential ("the plate constituted by the finger portion being at ground potential" at 6-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the voltage level of *Sone et al.* in view of *Johansen et al.* to include cyclically varying between a positive or negative supply voltage and a ground potential as taught by *Knapp* "to provide an improved sensing device which uses a capacitive sensing approach but which avoids at least to some extent the aforementioned problem." *Knapp* at 2:23-26.

Regarding **claim 2**, *Sone et al.* is characterized in that the individual parameters comprise a phase and amplitude (it is inherent that all electrical signals contain a phase and amplitude component that may also be regarded as an "individual parameter") of the response signal (fig. 3,

items (c), (d)) which change in accordance (items T1, T2 in fig. 3 occur due to the impedance of the object having an effect) with an impedance (the object contains impedance) of the object (finger in fig. 1) with which the apparatus is in contact through said detection element (fig. 1, item 3).

Regarding **claim 3**, *Sone et al.* is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects a phase difference (items T1, T2 in fig. 3) between the supply signal (fig. 3, item (a); fig. 1, item A) and the response signal (fig. 3, items (c), (d); fig. 1, item B) as the waveform information.

Regarding **claim 4**, *Sone et al.* is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects a detection signal corresponding to an amplitude peak value (the square waves in fig. 3 are either 0 or the amplitude peak value, of which both are detected) of the response signal (fig. 3, items (c), (d); fig. 1, item B) as the waveform information.

Regarding **claim 5**, *Sone et al.* is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) separately detects waveform information representing a phase (refer to references/arguments cited in claim 3) of the response signal (fig. 3, items (c), (d); fig. 1, item B) and waveform information representing an amplitude of the response signal (refer to references/arguments cited in claim 4), and

said biometric recognition unit (fig. 7) determines on the basis of the respective detection signals representing the pieces of waveform information whether or not the object is a living body ("the signal B is a decision signal which identifies whether the human body contacts the touch electrode 3 or not" at 3:33-46).

Regarding **claim 15**, *Sone et al.* is characterized in that said biometric recognition unit (fig. 7) determines whether or not the object is a living body ("the signal B is a decision signal which identifies whether the human body contacts the touch electrode 3 or not" at 3:33-46), by comparing a recognition index value (fig. 3, item (a) having delay = 0) obtained from the waveform information of the detection signal (fig. 1, item B) with a reference range of a plurality of recognition index value reference values (those delays > 0 which could potentially be the presence of a living body) obtained under a plurality of measurement conditions.

Regarding **claim 16**, *Sone et al.* in view of *Johansen et al.* and *Knapp* is not characterized in that said biometric recognition unit performs the determination on the basis of a plurality of recognition index values obtained respectively for supply signals having different frequencies generated by said supply signal generating unit.

Johansen et al. discloses a system for real time finger surface pattern measurements that teaches that a biometric recognition unit (fig. 1, items 9-12) performs the determination on the basis of a plurality of recognition index values (2:7-21) obtained respectively for supply signals (3:60-64) having different frequencies ("different frequencies" at 2:37-43) generated by a supply signal generating unit (fig. 3, item 34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the biometric recognition apparatus of *Sone et al.* in view of *Johansen et al.* and *Knapp* to be characterized in that said biometric recognition unit performs the determination on the basis of a plurality of recognition index values obtained respectively for supply signals having different frequencies generated by said supply signal generating unit as taught by *Johansen et al.* "to apply the measuring results…in such a way that the finger surface pattern can be determined more accurately.", *Johansen et al.*, 2:3-6.

Regarding **claim 17**, *Sone et al.* is characterized in that said biometric recognition unit (fig. 7) performs the determination on the basis of a plurality of recognition index values (fig. 3, items (c), (d)) obtained respectively for different elapsed times (items T1, T2 in fig. 3) from the start of application of the supply signal.

Regarding **claim 18**, *Sone et al.* is characterized in that when comparing said each recognition index value (items T1, T2 in fig. 3) with the reference range (fig. 3, item (a) having delay = 0), said biometric recognition unit uses an individual reference range (fig. 7, item 18) corresponding to a measurement condition under which each recognition index value is obtained.

Regarding **claim 19**, *Sone et al.* is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects a phase difference (items T1, T2 in fig. 3) between the response signal (fig. 3, items (c), (d)) and a reference signal (fig. 1, item (a)) synchronized with the supply signal (fig. 1, items A, V_{SS},V_{DD}) as the waveform information.

Regarding **claim 20**, *Sone et al.* is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects an amplitude (amplitude is detected) of the response signal (fig. 3, items (c), (d)) with respect to a reference signal (fig. 1, item (a)) synchronized with the supply signal (fig. 1, items A, V_{SS},V_{DD}) as the waveform information.

Regarding **claim 21**, *Sone et al.* is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects a phase difference between the response signal and a reference signal synchronized with the supply signal (refer to references/arguments cited in claim 19) and an amplitude of the response signal as the waveform information (refer to references/arguments cited in claim 20).

Regarding **claim 22**, while *Sone et al.* in view of *Johansen et al.* and *Knapp* disclose a biometric recognition apparatus according to claim 1, and while *Sone et al.* is characterized in

that said supply signal generating unit (fig. 1, items A, V_{SS},V_{DD}) includes a frequency generating circuit (circuit responsible for creating fig. 3) which generates a rectangular wave signal having a predetermined frequency ("symbol A designates a rectangular signal of a predetermined period (e.g., 64 Hz)" at 3:33-37), and a waveform shaping circuit which extracts a desired frequency component from the rectangular wave signal (fig. 3) generated by said frequency generating circuit as the supply signal, and generates, as the supply signal, *Sone et al.* does not teach wherein the supply signal generating unit (fig. 1, items A, V_{SS},V_{DD}) generates an AC supply signal having a predetermined frequency.

Johansen et al. discloses a system for real time finger surface pattern measurements that teaches wherein a supply signal generating unit (fig. 3, item 34) generates an AC supply signal (3:60-64) having a predetermined frequency ("the system uses only a single frequency" at 1:33-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the supply signal generating unit of *Sone et al.* in view of *Johansen et al.* and *Knapp* to include generating an AC supply signal having a predetermined frequency as taught by *Johansen et al.* "to apply the measuring results…in such a way that the finger surface pattern can be determined more accurately.", *Johansen et al.*, 2:3-6.

Regarding **claim 30**, *Sone et al.* is characterized by further comprising a frequency control unit (unit responsible for outputting items A, V_{SS},V_{DD}) which outputs a frequency control signal which designates a frequency of the supply signal (fig. 1, items A, V_{SS},V_{DD}), wherein said frequency generating circuit (circuit responsible for creating fig. 3) outputs a rectangular wave signal (fig. 3) having a frequency corresponding to the frequency control signal, and said waveform shaping circuit (fig. 8, item 25) extracts a frequency component corresponding to the

frequency control signal from the rectangular wave signal and outputs the frequency component as the supply signal (arrow outputted from item 25 in fig. 8).

<u>*Sone et al. in view of Johansen et al., Knapp, and Fouche et al.*</u>

[8] **Claims 7-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sone et al.* in view of *Johansen et al.*, *Knapp* and U.S. Patent No. 5,311,550 (issued May 10, 1994; hereinafter "Fouche et al.").

Regarding **claims 7-8**, while *Sone et al.* in view of *Johansen et al.* and *Knapp* disclose a biometric recognition apparatus according to claim 6, *Sone et al.* in view of *Johansen et al.* and *Knapp* does not characterized in that said waveform information detection unit detects (i) a phase difference between the supply signal and the response signal as waveform information representing the imaginary component and (ii) an amplitude peak value of the response signal as waveform information representing the real component.

Fouche et al. discloses a transmitter, transmission method and receiver that teaches a waveform information unit (fig. 12, item 75) detects and stores (i) a phase difference as waveform information representing the imaginary component and (ii) an amplitude peak value representing the real component (14:45-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the waveform information detection unit of *Sone et al.* in view of *Johansen et al.* and *Knapp* to detect and store (i) a phase difference as waveform information representing the imaginary component and (ii) an amplitude peak value representing the real component as taught by *Fouche et al.* AND the phase/amplitude difference to be the difference between the supply signal and the response signal "offers the original feature of reducing or eliminating the auto-distortion of the signal by using long transmission intervals for the information elements (often

called symbols) to be transmitted [and t]o obtain a high throughput a plurality of information elements are simultaneously transmitted by using orthogonal channels.", *Fouche et al.*, 1:57-63.

Sone et al. in view of Johansen et al., Knapp, and Koyama

[9] **Claims 23** and **31** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sone et al.* in view of *Johansen et al., Knapp* and U.S. Patent No. 5,990,804 (issued Nov. 23, 1999, hereinafter "Koyama").

Regarding **claim 23**, while *Sone et al.* in view of *Johansen et al.* and *Knapp* disclose a biometric recognition apparatus according to 22 15, *Sone et al.* in view of *Johansen et al.* and *Knapp* are not characterized in that said waveform shaping circuit includes a low-pass filter which extracts a desired low-frequency component from the rectangular wave signal.

Koyama discloses an animate body detector (fig. 1) that teaches a waveform shaping circuit includes a low-pass filter (fig. 5, item 30a) which extracts a desired low-frequency component (4:40-57) from the rectangular wave signal ("OUTPUT SQUARE PULSE" in fig. 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the waveform shaping circuit of *Sone et al.* in view of *Johansen et al.* and *Knapp* to include a low-pass filter which extracts a desired low-frequency component from the rectangular wave signal as taught by *Koyama* that "removes the radio-frequency components of the oscillation frequency", *Koyama*, 4:40-57.

Regarding **claim 31**, claim 23 recites identical features as in claim 31. Thus, references/arguments equivalent to those presented above for claim 23 are equally applicable to claim 31.

Allowable Subject Matter

[10] **Claims 9-14, 24-29,** and **32** allowed.

Conclusion

[11] Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID P. RASHID whose telephone number is (571)270-1578. The examiner can normally be reached Monday - Friday 7:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-74155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
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